IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE

BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	David Curt Morris	**Group Art:**	3745
Serial No.:	09/328,931	**Examiner:**	Christopher M. Verdier
Filing Date:	06/09/1999	**Docket:**	MO1.003
Title:	HELICOPTER BLADE ASSEMBLY ADAPTED TO PERMIT RAPID FORWARD FLIGHT		

Date: 09/27/2002

Board of Patent Appeals and Interferences
Washington, D.C. 20231

Mr. David Curt Morris,	)	
Appellant	)	APPEAL BRIEF
vs.	)	UNDER 37 CFR 1.191
United States Patent Office,	)	
Appellee.	)	

Introduction:

This Appeal Brief is submitted in triplicate and is accompanied by the fee set forth in 37 CFR 1.17(c). This Appeal Brief is filed on June 14, 2002. All claims under Appeal have been twice rejected.

Real Party in Interest:

The Real Party in Interest is David Curt Morris, a resident of New York, New York, the inventor of the present invention.

Related Appeals and Interferences:

There are no known related Appeals or Interferences know to Appellant.

Status of the Claims:

Claim 1 has been amended since it was originally filed, but has been twice rejected in its present form. Claim 2 is as originally filed and has twice been rejected as it stands dependent on claim 1 in its present form. Claims 3 and 4 were added by amendment and have now been twice rejected.

Status of the Amendments:

No amendment after final has been filed.

Summary of the Invention:

The present invention is a helicopter blade assembly (Reference No. 10 of Figs. 1A, 1B, 2A, 3A, 3B, 4A, 4B, 5A, 5B, 6A and 6B) for a craft with either one or two blade-sets. The blade assembly is constructed so that the rotation of the blades provides lift during takeoff and landing (Page 5, lines 29-30). During rapid forward flight, however, the blades sweep out the shape of a

virtual disk that acts as a lifting body(Page 8, lines 11-12), so that as the virtual disk cuts rapidly through the air it generates lift (Page 5, lines 34-37; Page 8, lines 11-12).

ISSUES

1. Should claim 4 be rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, due to the supposed indefiniteness of the terms "substantially" and "gently"?

2. Should claims 1 and 4 be rejected under 35 U.S.C. 102(b) as being anticipated by Wallace (figure 2)?

3. Should claims 1-4 be rejected under 35 U.S.C. 102(b) as being anticipated by Wilford (figure 5)?

4. Should claims 1-3 be rejected under 35 U.S.C. 102(b) as being anticipated by Kingsbury (figures 2-3)?

5. Should claim 1 be rejected under 35 U.S.C. 102(b) as being anticipated by Hartt (figure 2)?

6. Should claims 1-3 be rejected under 35 U.S.C. 102(b) as being anticipated by Bennie?

7. Should claim 1 also be rejected under 35 U.S.C. 102 (b) as being anticipated by Black (figures 1-2 and 4)?

8. Should claims 1 and 4 also be rejected under 35 U.S.C. 102(b) as being anticipated by Kunz (figures 1 and 3)?

GROUPING OF CLAIMS

Claims 1-4 form a single group insofar as they all stand rejected for lack of novelty under 35 USC §102. Claim 4 forms a subgroup because it is also rejected due to supposed indefiniteness.

ARGUMENT

Argument With Respect to Issue 1:

Claim 4 stands rejected for indefiniteness because of the use of the words, "gentle" and "substantially." Between 1996 and the present date, 40,624 U.S. patents have been issued in which the word "substantially" appears in the claims, but not in the remainder of the specification. In the same time span, 37 U.S patents were issued in which the word "gentle" appears in the claims but not the remainder of the specification. Accordingly, it cannot be accurately stated that the PTO requires patents using these terms in the claims to explicitly define them in the remainder of the specification. In the present invention, the terms "substantially" and "gently" as used in the claims have a definite meaning as shown by the drawings and the accompanying text.

Argument Portion that Applies to Issues 2-8:

This brief section is followed by a set of sections that treat each issue specifically and separately. In the

interests of economy, applicant has taken the step of grouping together those arguments that apply to each one of issues 2-8, rather than repeating them.

INHERENCY

As the Examiner has argued anticipation based on the inherent properties of devices shown in the cited references, appellant will first briefly discuss the doctrine of inherency. The court of appeals for the federal circuit has stated that, "The mere fact that a certain thing may result from a given set of circumstances is not sufficient [to establish inherency.]" In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993), citing In re Oelrich, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). It is the PTO's responsibility to show anticipation by showing that at least one reference meets the limitations of the claim in question. Id.

Interpretation of Claim 1

Claim 1 specifies "a set of rotatable blades which sweep out the shape of a virtual disk having the properties of a lifting body when they are rapidly rotated by the mast, so that as the virtual disk is pushed translationally through the air it thereby generates lift." (Emphasis added). The Examiner in analyzing the declarations submitted by appellant, notes that the declarants state that the prior art helicopter blade assemblies generate lift by virtue of the helicopter blades slicing through the air with an angle of attack that generates lift. (Page 3 of the Office Action mailed on December 14, 2002). The Examiner further states that this supports the PTO's contention that the standard helicopter blade assembly generates lift during

forward flight. Id. The lift is not generated, however, by virtue of the blade set being translated through the air, but in spite of it. Appellant respectfully submits that this is the central point of disagreement. The word, "thereby" in claim 1 indicates that it is by virtue of the translational movement that lift is generated. The Examiner has not shown that any of the prior art blade sets would generate lift by virtue of being translated through the air as they are rotated, as opposed to generating lift by the action of each blade. Appellant has never taken the position that a standard helicopter blade does not generate lift in forward flight. Appellant's position is that this lift is generated by a different mechanism than that specified in claim 1. As a practical matter, the mechanism by which a standard helicopter blade set generates lift fails to work if the helicopter is moving at too great a rate of speed. The mechanism of the present invention continues to work at rapid forward speeds, albeit they must be subsonic to prevent damage to the aircraft.

Appellant believes it is instructive to note that in the Examiner's rejection of claim 1, in the December 14, 2001 Office Action, on page 10, the Examiner left out the word "thereby" when detailing the characteristics of the Wallace reference blade set that result in the supposed anticipation of claim 1. It cannot, therefore, be stated that the Examiner fully addressed the limitations of claim 1 when rejecting it as being anticipated.

On page 5 of the December 14, 2001 Office Action the Examiner states, "all of the airfoils of Wallace, Wilford, Kingsbury, Hartt, Bennie, Black and Kunz have at least some degree of camber. Because the airfoils are cambered, they will function according to the exact same principle of operation as Appellant's airfoil. Webster's

New World Dictionary, Second College Edition, defines camber as, "a slight convex curve of a surface as of a road, a ship's deck, a beam, etc." Accordingly, to be cambered helicopter blades should slope downwards towards their outer ends. This attorney does not see any such camber in any of the references cited by the Examiner. The only item that would appear to possibly impart a camber to a shape when rotated is the free end 6 of the arm 4 of the Kingsbury propeller. These are not blades, however, but more like metal rods. As noted below, this is for a propeller, not a helicopter blade set.

The Examiner has stated that "any rotating object will sweep out the shape of a lifting body." (Page 7, of the Office Action mailed on December 14, 2002). It is hard to understand how the Examiner could have reached this conclusion. The textbook excerpts that the Examiner forwarded to the appellant all discuss lifting bodies in terms of various characteristics which give them lift when they cut through the air. It is true that any rotated object will sweep out a generally circular shape. There is no reason, however, to assume that the qualities of this shape would make it into a lifting body, if it did not have the particular features to make air passing over the object travel more rapidly than air passing under the object. If one were to believe that any rotated object would sweep out a lifting body, be it golf club, typewriter, desk or wildebeest, then one would have to believe that all of the references cited by the Examiner sweep out lifting bodies. There is no teaching that they do, however, and the Examiner has not made a showing that they do, which would be necessary to back up a claim that they inherently teach the invention of the present application. Whether or not an object is a lifting body requires some analysis, as the Examiner's textbook

references show. The Examiner has not presented any aerodynamic analysis to back up his claim that the references show blades that sweep out a lifting body. Of course, no analysis would be necessary if any shape would do this.

SCIENTIFIC SUPPORT FOR THE BASIC PRINCIPLE

Supporting the concept that a set of rapidly rotating blades may assume the properties of the shape they are sweeping out, Exhibit A is attached. This shows that a rapidly rotating blade blocks air flow better than a slowly rotating blade. The vertical axis is baffle or blade set revolutions per minute (in 100s), for a blade set intersecting a tube through which air pressure is applied and the horizontal axis is the speed with which air exits the tube. It can be seen that the faster the blade rotates the more it takes on the characteristics of a continuous solid with respect to air flow about itself.

Argument Specific to Issue 2:

Wallace teaches against the present invention because it show an actual circular wing 17 that is carefully shaped to be a lifting body. Claim 1 of the present application recites, "a set of rotatable blades which sweep out the shape of a virtual disk having the properties of a lifting body when they are rapidly rotated by the mast...." (Emphasis added). The Examiner has stated, "rotation of the blades or circular wing about a vertical axis causes a virtual disk to be swept out." Rotation of a circular wing does not anticipate appellant's invention, however, because claim 1 specifically recites that it is blades that sweep out the virtual disk and also because in the case of the circular

wing, the disk is not virtual, but is the physical, unchanging shape of the circular wing.

Argument Specific to Issue 3:

With respect to Wilford et al., FIG. 5 clearly shows a clear break in orientation between wing portion 10 and wing portion 11. Every reference to a lifting body, from the textbook sections forwarded by the Examiner to the discussion of the disk in Wallace (see below), indicates that a lifting body has a gentle curvature without sharp changes. Absent an explicit teaching, the burden is on the PTO to show that the blade assembly shown by Wilford et al. could sweep out a virtual disk that would act as a lifting body. There is simply no reason to believe that the assembly shown by Wilford et al. could do this, absent some showing of another lifting body with a sharp kink in the upper surface. To this attorney, it appears that the air would be accelerated upwardly at an angle by portion 11 of the Wilford et al. blade but then would not flow directly over portion 10 but would overshoot it.

Argument Specific to Issue 4:

With respect to Kingsbury, although the Examiner states that the preamble language of claim 1 is a "quasi-intended use recitation," the body of claim 1 makes it clear that the blades are to be held and rotated by a vertical mast. There is simply no suggestion in Kingsbury of using the blades shown in conjunction with a vertical mast, as a propeller is held and turned by a horizontal axle. There is no indication in Kingsbury as to what sort of shape would be swept out by the blades. The drawings are far too crude. To say that one could tell that the swept out shape, if turned on its side, could act as a lifting body is at best a mere guess.

Argument Specific to Issue 5:

There is simply no indication that the blade set 46 of Hart sweeps out the shape of a lifting body. They are not shaped so as to do so (no camber) and there is no suggestion in the text that they do so.

Argument Specific to Issue 6:

With respect to Bennie, appellant does not understand how it is that the Examiner equates aerodynamic warp with camber. As noted above, camber has a definite specific meaning, which the blades shown by Bennie do not meet because they do not slope downwardly toward their outer ends.

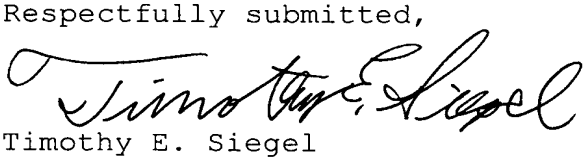
Argument Specific to Issue 7:

Black teaches against the present invention because he shows an actual physical disk 46 that is carefully shaped to be a lifting body. Claim 1 of the present application recites, "a set of rotatable blades which sweep out the shape of a virtual disk having the properties of a lifting body when they are rapidly rotated by the mast...." (Emphasis added). The Examiner has stated, "rotation of the blades or circular wing about a vertical axis causes a virtual disk to be swept out." Rotation of a circular wing does not anticipate appellant's invention, however, because claim 1 specifically recites that it is blades that sweep out the virtual disk and also because disk 46 of Black is not virtual, but fully physical. There is no suggestion that the blades 44 sweep out the shape of a lifting body.

Argument Specific to Issue 8:

Kunz teaches against the present invention because he shows an actual physical disk 24 that is carefully shaped to be a lifting body. Claim 1 of the present application recites, "a set of rotatable blades which sweep out the shape of a virtual disk having the properties of a lifting body when they are rapidly rotated by the mast...." (Emphasis added). The Examiner has stated, "rotation of the blades or circular wing about a vertical axis causes a virtual disk to be swept out." Rotation of a circular wing does not anticipate appellant's invention, however, because claim 1 specifically recites that it is blades that sweep out the virtual disk and also because disk 24 of Kunz is not virtual, but fully physical. Also, there is no indication that blade set 38/42/26' sweeps out the shape of an airfoil. The structure 26' is described as being "fan blades," appear to be very thin and would not appear to have the function of supporting the craft in forward flight, but rather appear to work in conjunction with structure 24, to achieve some other aerodynamic goal.

Respectfully submitted,



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APPENDIX

CLAIMS UNDER APPEAL

1. A helicopter blade assembly for permitting rapid forward flight in a helicopter having separate means for providing a forward impetus, comprising:

substantially vertical mast; and

a set of rotatable blades which sweep out the shape of a virtual disk having the properties of a lifting body when they are rapidly rotated by the mast, so that as the virtual disk is pushed translationally through the air it thereby generates lift.

2. The assembly of claim 1, further comprising means for controlling the camber of the blades, thereby controlling the shape of the virtual disk.

3. The helicopter blade assembly of claim 2, wherein said blades have outward tips and said means for controlling the camber of the blades selectively introduce a downward bending near said outward tips of said blades.

4. The helicopter blade assembly of claim 1, wherein said virtual disk shape swept out has a center and a circular edge and is substantially flat at and near said center and slopes gently downwardly near said circular edge.